1: Jenness--14 (1913-16) 1922 Copper Eskimo
116, 133

"Generally speaking the coast is low, sloping back in undulating ridges to an interior plateau. The ridges run usually east and west at no great distance from each other, and are connected by numerous short transverse ridges that enclose a network of lakes and ponds of every size and shape. At various points along the shore there are upstanding cliffs of dolomite or diabase. The coast becomes more rocky east of the Coppermine river, and granite makes its first appearance. Nearly all the islands with which Coronation gulf is littered have high upstanding cliffs facing the east and south. Only three rivers carry any great volume of water, the Coppermine (Kogluktok), the Tree (Kogluktualuk) and the Hood (Kattimannik); but there are numerous smaller rivers, the Rae (Pallik), the greater and lesser rivers Kugaryuak, the Anialik, the Wentzel (Kogluktuaryuk), the Utkusikkalluk, and, on Victoria island, the Kimiryuak flowing into Forsyth bay, and the Kugaluk which enters the sea behind Bell sland. [sic]"

1: Jenness--15-17 (1913-16) 1922 Copper Eskimo
116, 103, 133, 221

"The Eskimos have names not only for different divisions of the country, but also for certain subdivisions of them, and most of the creeks and many of the more important lakes, headlands, and islands have also their distinctive appellations. The most westerly district that is still inhabited is the country known generally as Akulliakattak, which extends along the coast from about Stapylton bay to Cockburn point and for an indefinite distance behind. The more correct designation for this area is Akunnik, for Akulliakattak is really only the name for Hope point and for a fair-sized lake behind it, ten miles long perhaps and four miles wide, which is the rendezvous of the Eskimos who have hunted and fished in the interior during the spring and summer. At this lake they sew their new deerskin clothes in the autumn, and make their preparations for going out on the ice of the strait and beginning the winter's sealing. Leaving Lake Akulliakattak, they migrate down the stream Siorak into South bay. Often they stop a day or two at Cape Bexley to make their final preparations before crossing the strait, whence this cape has received the name of Ineksarvik, the 'Place where everything is finished.' One derivation for the word Akulliakattak gives it the meaning of 'Short portage', which would refer to an overland route from Stapylton or South bay to the head of the Rae river, a route the Eskimos often take in preference to the long journey

round the coast. (2) Mr. J.R. Cox, one of our topographers, made this portage in the course of his surveys, and the brief description he has given of the country will be found a little farther on. The Eskimos say that it abounds in fish, and that caribou are fairly numer-[16]ous in spring and summer, though not to the same extent as farther east. In many places near the coast we found the remains of Eskimo caches, and stones set up for deer-drives. Cockburn point is called Aiyeyak, and the two small islands off it Piyumaleksiakuk.

East of Akulliakattak or Akunnik is Noahognik, a district which includes all that broad triangular peninsula that has its apex at Locker point. Here the country is more irregular, with the ridges higher and the lakes more numerous. Fish are very abundant, and many caribou pass through on their annual migration to and from Victoria island. Bernard harbour is an excellent wintering place for small schooners, but the Eskimos have no name for it, though the small bay next to it, on its eastern side, is called Ugyuksiorvik. Off the entrance to the harbour lies Chantry island Kikiktaryuak,

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"2. Erdmann (Eskimoiches Worterbuch), gives the meaning in Labrador as 'ein Mittelland,' i. e., the and between two bays or gulfs."

the 'Big island,' so named because it is much larger than the tiny islets and reefs that fringe the coast. In 1914 some of the local Eskimos passed the interval between the summer's hunting and the winter's sealing on its northern extremity, for food was scarce, and the men could hunt for seals in the broken ice off the point while the women stayed at home and sewed their winter garments. Other natives gathered at the mouth of a small creek, Nulahugyuk, four miles east of Bernard harbour, which issues out of a large lake named Hingittok or Hingiktok, a few miles inland. In spring large numbers of salmon migrate up this stream to the lake and at the same time, or usually perhaps a little later, there is a seaward migration of the young salmon out of the lake itself. In 1916 the migration up-stream began in May. Towards the end of June it ceased, and nearly all the Eskimos who had gathered there to fish went inland. But a few days later the young fish, probably two seasons old, began to come down, and at the same time there was a renewal of the upstream migration of the larger salmon. Only one family of Eskimos had remained behind, and they reaped all the benefit. Generally three or four schools, each numbering from six to thirty-six fish, would enter the stream within the twenty-four hours. [17]

About eight miles east of Nulahugyuk creek there is another named Kogluktuaryuk. Here too the salmon migrate in large numbers, and bearded seals haunt the adjacent waters. North of Cape Lambert, whose dolomite cliffs rise to a height of eighty feet,

are the Lambert islands, a favourite sealing-ground of some of the local Eskimos in early spring. Lakes and ponds are very numerous in the country behind this cape. One of the largest is Lake Kogluktuaryuk, the source of the creek of the same name; its diameter is about a mile and a half, and it lies a few miles south-west of Cape Lambert. The Eskimos often come here to fish; in the spring of 1916 we saw the remains of a camp on the shore of the lake and three of their caches on the coast just north of it. Willow is scarce here, but heather abundant, so that the natives had no lack of fuel; besides heather they seemed to have used also a few sticks of driftwood which they had carried in from the coast.

In the same spring a band of natives was fishing on another fair-sized creek that flows into Paisley cove. It is called Noahognik, and, like the others, issues from one of the many lakes two or three miles inland. Cape Krusenstern is Nuvuk, the 'Point', and Mount Barrow, in the peninsula behind it, Uvaiyu. The low narrow isthmus just north of Mount Barrow is a favourite portage of the Eskimos, as it enables them to avoid the longer route and the rough ice that always gathers round Cape Krusenstern. Another longer portage is often made here, especially by natives coming from the south; they begin from the bay just west of Locker point (Tikirak), on the left side of the high bluff Kikigarnak, which lies directly behind the point; then, crossing a chain of small

lakes and skirting a low hill named Imneligaryuk, they issue into the deep bay between Cape Krusenstern and Paisley cove. The small bay at the east end of the shorter portage is a well-known place for tom-cod, and the coast in the vicinity is an excellent hunting-ground for both the rough seal (Phoca hispida) and the bearded seal (Erignathus barbatus), which are the mainstay of the Eskimos during the winter."

1: Jenness-17-19 (1913-16) 1922 Copper Eskimo
116, 133

"One of the regular routes which the caribou take in their spring migration to Victoria island is across the neck of the Krusenstern peninsula. Eskimo encampments have therefore left their remains on all the highest points in the neighbourhood. On the summit of the hill Kikigarnak, behind Locker point, there is a peculiar stone hut which may have been an observation post over the surrounding country. The country to the south and east of here has been described for me by our two topographers, Messrs. J.R. Cox and K.G. Chipman, who made a survey of the coast and a part of the hinterland. Mr. Cox begins his account thus: --

'Travelling south from the abrupt limestone cliffs of Cape Krusenstern, one reaches in three or four miles a country for the most part grass-covered and far more pleasant to the eye than the desolate coast of Dolphin and Union strait. From the high land back of Cape Lockyer [Locker point] one may look inland for many miles over a vast grassland broken only by a ridge of low cliffs that extends from the first bay to the north of Basil Hall bay to Cape Lambert. The same type of country continues to Basil Hall bay, a narrow inlet with shores from fifty to two hundred feet high, which extends in a northwesterly direction for about ten miles from the coast. The low grassy hills at the foot of the inlet are said by the Eskimo to be one of the best places to get deer in the summertime. The south shore of Basil Hall bay runs out to form the low shingly promontory of Cape Hearne. About three miles back from the point there is a fine set of

cliffs rising to a height of 205 feet. (1) [18]

The country to the south and west is again low and grassy till near the foot of the next bay. From this bay to Cape Kendall (Imnalugyuat) the foreshore is low and tundra-like, though a few miles inland it rises to a height of two or three hundred feet, in uneven and somewhat rocky terraces.

At Cape Kendall the dolomite country gives way to the more severe and rough diabase country. From Cape Kendall to some twenty miles up the Rae river (Pallik), (1) on the north side, there is an almost continuous series of diabase bluffs which average about 180 feet in height. At the mouth of the Rae river there is a low grass flat several miles wide where there are always deer to be found in the spring-time. The Rae river carries only a small volume of water, and from what one can see of it in winter-time, has a large number of rapids. About 18 miles from the coast there is a cascade of

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"1. No name was obtained for Cape Hearne itself, but the cliffs behind it had apparently two names, Imik and Ulugvik. The bight between Basil Hall bay and Cape Kendall is called Ituksiorvik."

"1. The name Pallik has been extended to embrace the whole of the Rae river region."

about ten feet, where, in the summer-time, the Eskimo frequently gather to spear fish. From 20 to 50 miles up the Rae river, the country is for the most part open, grassy and rolling, with occasional isolated diabase buttes. About 32 miles up, the river expands into a lake a third to half a mile wide and eighteen miles long, lying in a trough at the southern edge of the grass country, which extends as far as one can see to the north. A couple of miles to the south the country drops off several hundred feet into what appears to be very rough and rugged rocky country. At the west end of the lake the river passes through a series of low rocky diabase hills for several miles. Here a considerable number of stone caches and shooting shelters were noticed. To the west of these hills the river again expands into a long narrow lake through open grassy country, and after about ten miles breaks up into four small branches. This is practically the head of the river, and here the willows are plentiful and large -- growing up to fifteen or twenty feet high. Elsewhere on the river willows are scarce and small, with the exception of a couple of small willow-covered islands in the first lake.

Striking overland in a northeasterly direction from the head of the Rae river one travels for thirty-five miles through a gently rising grass country with only one low dolomite ridge. Thence to the coast on the south side of Stapylton bay, the country, though still for the most part grassy, is rather more uneven, and one passes three sets of low hills formed of mud and gravel, and holding one or two very small lakes. No

large lakes were seen from the head of Rae river to the coast. Eskimo shooting shelters and tent rings were observed amongst the mud hills.'

Mr. Chipman then continues the account for the Coppermine river region: --

'The Richardson river (2) comes from the south and southwest and empties into the same inlet as the Rae river. What is apparently a large flat to the south of the Rae is really a triangular flat of which two sides are the Rae and the Richardson. This flat is a feeding ground in the fall and spring for large herds of caribou, and just across the Rae are numerous stones and turfs for drives. The mouths of the rivers are said to be good fishing places, but some distance from the sealing grounds.

From the Rae to the Coppermine (Kogluktok) the country is made up of gentle grassy slopes and valleys broken by diabase hills with the characteristic steep slopes to the

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"2. Mr. Chipman gives two names for this river, Niakongiak and Kugnahik; the latter means simply 'River.' I myself obtained (from description only) the name Walliak, which was extended to apply to the whole region between the Rae and the Coppermine rivers. From this word comes the name Walliarmiut, by which all these western Coronation gulf Eskimos often designate themselves."

south and more even slopes to the north. The former afford good hunting grounds for caribou.

The Coppermine reaches the coast through two mouths enclosing a large low island, grass covered except for two diabase hills on the northern end. [19] This island is a well-known fall gathering place for those Eskimos who have spent the summer up the Coppermine, those who have been in the country of the Rae and Richardson rivers, and for some people from the east. It is a good fishing ground, and when we were there in the spring, herds of caribou were continuously visible.

Inland from the mouth of the Coppermine, the country is generally tundra, rising evenly and with scattered lakes in the small valleys. Not far above the mouth the river contracts to about half a mile in width and has steeply sloping alluvial cut banks."

1: Jenness--19-20 (1913-16) 1922 Copper Eskimo
116, 133, 487

"The route up the west side of the Coppermine is one of easy travel. Long, gentle, grassy tundra slopes to low rolling country offer no difficulties to either packing with dogs or travel with toboggan. The usual travel is some distance back from the river, and before they strike for Dismal lake, no creeks with steep gullies are met. Travelling toward Dismal lake, the country is level with a good deal of swampy tundra until one commences to climb the long slopes of the so-called Copper mountains. These mountains, which attain an elevation of probably not more than 1,500 feet, are in reality a long series of basalt terraces. Since they occupy a belt of about fifteen miles wide and the terraces are numerous and low, the general effect is of a long gentle slope on the north with a somewhat steeper and more irregular slope to the south. Dismal lake lies just south of this ridge. (1)

"1. The Rev. H. Girling writes that 'The Eskimos go up the Coppermine to where a line of cliffs running inland comes to an end in a round hill with a definite cutting on the east side. This hill is known as Kolukhuk, and from its summit the Dismal lakes are clearly visible. The natives follow the hills to a gully, which leads them to the lakes."

From Dismal lake to Lake Rouvier, the country is more rugged, but there are at least two recognized routes to Lake Rouvier, both of them following the gentle sloping valleys of creeks which have numerous lakes. These valleys offer good feeding and hunting grounds for caribou, and the lakes probably contain fish. [20]

Lake Rouvier is the source of what may be considered as the east branch of the Dease river. The route crosses the lake, then cuts east over a low and gently sloping ridge of tundra hills to the south side of the valley of the main Dease river. It follows this to the 'Garche' hills, crossing the southeast branch of the Dease at 'Big Stick island; and from the 'Garche' hills, which are some fifteen miles east of Great Bear lake, the route goes through the timber to the lake.

With straight travel the above route would occupy about ten or twelve days. The Eskimos of course have to sustain themselves during the trip, and it takes them longer. It would seem that they usually leave the coast with enough dried meat for three or four days."

1: Jenness--21-22 (1913-16) 1922 Copper Eskimo
116, 133

"Mr. Cox now takes up the account of the country to the eastward: --

'About ten miles to the east of the Coppermine there is a small river (the Napaktauktuak), which runs back into timber and is said to have plenty of fish. Eight miles farther east is the western Kugaryuak, which reaches the coast through a wide grass flat. The country from here to the eastern Kugaryuak (1) (28 miles) is broken and rough -- typical of the diabase country. The eastern Kugaryuak is a fair sized stream and has plenty of willows about the mouth. About ten miles farther east there is a wide steep grassy valley coming down out of the diabase opposite a group of four large islands with striking bluffs. This place is known as Sallik, and is said to be a very good place to hunt deer in the spring-time. Immediately to the east of here granite takes the place of the diabase on the coast and continues to about ten miles west of Port Epworth. This is a rough and barren stretch of coast, though doubtless well supplied with lakes. From a grassy bay about twelve miles west of Port Epworth, there is a portage (about one-half to three miles) into a large lake which runs back of the coast to within a third of a

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"1. The valleys of both Kugaryuak rivers abound in caribou. All this region is known as Asiak.

mile of the southwest corner of Port Epworth. This route is sometimes used, and the lake holds plenty of fish.

From the point northwest of the bay mentioned to the large bay just south-west of Agiak (2) the coast is bleak and barren diabase, almost entirely devoid of soil and vegetation. (3) A few miles south of the coast, however, lies the granite country, which is relatively much more fertile, though extremely rough and swarming with lakes of all sizes. The Tree river (Kogluktualuk) running into the southeast corner of Port Epworth has granite on the east and dolomite on the west. About six miles up from the mouth are fine falls sixteen feet high, below which, and through the rapids which run for about two miles below the falls, the Eskimos do a good deal of fishing. In the summer of 1915, at least a dozen people made their living here -- chiefly on fish. There are plenty of willows up to three inches in diameter for fuel. Some ten miles above the mouth, the river forks into two branches of about equal size. Not much is known of the east branch,

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"2. The Eskimos here obtain whetstones for their knives, hence the name Agiak, i. e. 'Whetstone.'"

"3. The inland district between Tree river and Bathurst inlet is called Pingang-naktok."

though it is said to have its source in a large lake, which is also the source of the Hood river or of a branch of it, according to Maffa. (4)

Both branches of the Tree river run up into the timber about five sleeps up (i. e., 50 to 60 miles). The western branch for about 25 miles up runs through a rather narrow grassy valley with steep ridges on either side. The surrounding [22] country is full of lakes, most of which have fish. This west branch is said to come very close to the Coppermine river some distance above the big bend in that river, and the Eskimos sometimes make the portage across.

From the foot of Gray's bay the coast runs in a northeasterly direction to Cape Barrow (Hanninik), and is of granite throughout. Three rivers of nearly equal size come out to the coast in this stretch: the Anialik at the southwest corner of Gray's bay; the Kogluktuaryuk opposite the south end, and the Utkusikalluk opposite the north end of Hepburn island (Igluhugyuk). In the country lying between the Kogluktuaryuk and the

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"4. Maffa was a Tree river Eskimo who served the expedition as a hunter and guide. It is very improbable however, that the same lake should be the source of two distinct rivers flowing in different directions."

Utkusikalluk musk-oxen are still to be found in small numbers, and a group of natives was hunting them near the mouth of the Kogluktuaryuk as we passed there in the spring of 1916. About the Kogluktuaryuk, the coast and the country for a mile or two inland are low and grassy, but elsewhere the granite comes to the beach and the country is excessively rough. (1) Nevertheless, in the numerous tiny valleys there is considerable grass and feed, and caribou are fairly plentiful from March onwards.

From the foot of the north arm of Inman harbour (Amaroalligit) there is a very short portage over into Bathurst inlet a short distance north of Galena point. This is the route generally taken by the Eskimos.

From Cape Barrow to Detention harbour (Akeahugyuk) the country is granitic. From Detention harbour to Kater point (Naukhiakavik) the country is much broken and indented with deep bays, and there are many wide grassy valleys and flats -- as for instance at the foot of Moore bay, where we saw some tents near the mouth of the river (i.e., in the summer of 1915).

"1. This country is called by the natives Nennitak."

Practically all of the south and west sides of Arctic sound are open and rather low country. The Hood river (Kattimannik) comes in at the southwest side between fairly high mud banks, its mouth spreading out over several square miles of sand flats. At the southeast corner of Arctic sound, there is a small river known as the Kilusiktok.(1) [sic]

Banks peninsula is fairly high and rocky (amygdaloid), but has several fair-sized fishing lakes and some grassy valleys. On the east side of Banks peninsula a long sound runs down into 'Brown's channel,' which is in reality a bay with low grassy country at the foot. A fine set of diabase-capped dolomite bluffs from 800 to 1,000 feet runs along the west side of this low land. A small river (Hanningaksiorvik), running out of a lake a short distance inland, drains the valley.

East of this bay as far as we have gone the mainland consists of a red quartzite which makes a rather rough country. On the peninsula forming the west side of 'Brown's channel' is a large tidal lake in a stretch of low land. Here, and in small lakes close to it, is a favourite fishing place of the Eskimos. It is also a good place for caribou.

"2. The whole of the neighbouring district bears the same name."

With the exception of three, the islands in Bathurst inlet that we visited are so barren and rocky that they are not very much visited by caribou. The three islands that have a fair proportion of grass-land are the two Kannuyak islands and Algak (the island to the south of Igloryuallik), and caribou are plentiful on these islands in the spring-time. Algak, Ekkalulialuk, and the northern Kannuyak island have good fishing lakes."

"Banks peninsula was near the most easterly point of the mainland reached by any of the members of our expedition; the country beyond is known only from the journeys of the earlier explorers and of the Royal Northwest Mounted Police patrol in 1917, and from the descriptions of the Coronation gulf Eskimos. The eastern side of Bathurst inlet is known as Umingmaktok, while Kent peninsula to the north is Kiglinguyak. Farther east is Asiak, the country of the Asiagmiut people, while opposite them on the southeast corner of Victoria island is Ekaluktok, the home of the Ekaluktomiut. Hanbury says of Asiak that it is a very barren country, though caribou, musk-oxen and fish abound, while in winter polar bears are killed on the ice. This was borne out by the statements of an Asiak native whom I met near Bathurst inlet, but he added that there were no brown bears, although they are occasionally encountered west of Kent peninsula.

Turning to Victoria island there is the district of Hanerak, opposite Stapylton bay, on the other side of Dolphin and Union strait. This was the country of the Haneragmiut before they ceased to exist as a separate unit; it extends from about Cape Baring (Ikpigyuak) to the point marked 'Cliffs about 80 feet' on Rae's map, nearly northeast of Cape Bexley. Following the coastline around from Cape Baring, the first slight point, which also is marked by Rae 'Cliffs about 80 feet,' is called Nauyat, from the numbers of seagulls ((nauyat) which make it their haunt. Between Nauyat and Point Pullen

(Sinieluk), a rocky promontory connected with the mainland behind by a narrow isthmus of sandy clay, is Bell island (Kikiktaryuk). A long low sandpit runs out from the west side of Point Pullen towards Bell island, and a small sandy islet lies almost awash half way between the two, but Bell island itself is high and rocky. On it are the ruins of an old wood and sod hut, according to Captain Jos. Bernard, who wintered in a little nook behind Point Pullen in 1913-14. Mount Arrowsmith, directly behind, is called by the Eskimos Annorillit, and a peak just to the west of it is Kingmiktorvik. The Colville hills are here not more than a mile or two from the sea, and two creeks of considerable size have their outlets in Penny bay. One, the Attautsikkiak, rises beside Mount Kingmiktorvik, and rushes down in a narrow bed between high steep banks of clay superimposed on dolomite until it reaches the mud flats on the coast. In autumn the stream is diminished to a mere brook, though it evidently pours down a great volume of water in spring. The other creek, the Kugaluk, is larger and longer, flowing more from the east and receiving considerable accessions from a number of small lakes. Its banks are wider apart and generally not so high as those of the Attautsikkiak, though in one place, about five miles from the sea, where it cuts through a bed of dolomite running northwest by southeast, it forms a beautiful gorge some 300 yards long and from 50 to 100 yards wide, while the cliffs are about 40 feet high. Here the Eskimos often fish in summer, jigging with long lines from a ledge half way down the face of the

cliff into a deep pool beneath. Just below the gorge, nodules of pyrites are found in the creek bed, and from time immemorial the Eskimos have come here to gather them, using them to strike fire. The Kugaluk also pours its waters into Penny bay, about a mile southeast of the Attautsikkiak.

The dolomite cliffs of Cape Hamilton (Misumeok) are the most conspicuous feature along this coast. (1) The next small cape a few miles farther east is Niahognaryuk, and the coast for a few miles east of that again is called Kinaruk. About 25 miles east of Cape Hamilton are the dolomite cliffs of Tulukak, the home of 'ravens,' which have another home in a smaller dolomite cliff just to the west known as Tulukakak. To the traveller sledding along the coast, Tulukakak seems to be about 50 feet high, with its cliffs running north and south, Tulukak itself being a little higher and running approximately east and west. Then follows a shallow bay about 12 miles broad, bounded on the east by the cliffs of Ingnerin ('fire-stone,' because, it is said, pyrites exists here also). Ingnerin is sometimes [24] included in the country of the Akulliakattangmiut, for when that group crossed over from South bay in the autumn, it used to unite with the Haner-

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"1. Rae gives them an altitude of 170 feet."

agmiut at this place and spend the first part of the winter sealing in the vicinity. Although the Haneragmiut are now extinct as a separate group, the Akulliakattangmiut still cross over to Ingnerin and do not unite with their eastern neighbours as a rule until after the sun returns, i.e., about February.

Bordering on Hanerak is the district of Puivlik. Beginning from Ingnerin, it seems to reach to about Point Dickens, in the narrow strait just before it broadens out to make Coronation gulf. The general trend of the coast from Nauyat to Simpson bay is southeast, with a broad deep bight at Simpson bay. The Colville hills do not dip quite so far south, so that although at Richardson bay they come within a mile or two or the coast, farther east, to the north of Read island, the two are separated by an undulating plain from 10 to 15 miles wide. This plain, like the Colville hills to the north, is full of lakes and ponds some of which, especially those close to and draining directly into the sea, teem with fish, the sea salmon. North of Read island is the low peak Kingautak, a very familar landmark to the Eskimos. The Colville hills, which are of brownish clay formation without signs of any rock exposure, sweep round to the northeast with no apparent break, forming the 'Museum range' remarked by Mr. Stefansson. Here there is one very prominent peak, visible even from Simpson bay in clear weather; Mr. Stefansson called it Mount Bumpus, while the Eskimo name is Wivyaurun. Some ten miles NNW. of Wivyaurun, in about lat. 69° 45′N and long. 113°W., is a

large lake apparently about ten miles in diameter, though it is difficult in the spring to distinguish islands from shore line even with the binoculars. This is Lake Tahiryuak, beyond the Colville divide, a well-known rendezvous where the Puivlik natives of the south meet the Kanghiryuak natives of the north in the later days of spring. From Mount Wivyaurun, Museum range (or the Colville hills), for the two here seem identical, appears to continue down to the southward, probably with a trend east.

The Colville hills enclose an enormous number of lakes and ponds, ranging from tiny lagoons a few yards wide to lakes several miles in diameter. All except those that freeze to the bottom in winter abound in lake trout and lake[25] salmon, and the Eskimo inhabitants spend four or five months each year in wandering about from one fishing-ground to another. The ridges themselves are almost devoid of vegetation, but there are pleasant meadows here and there round the margins of the lakes. Most of the deer that remain in this part of Victoria island during the summer, however, find better pasture on the plains nearer the sea.

Several large creeks, almost rivers, flow out of the hills into Simpson bay. One issues out into the sea beside a high knoll named Tipfiktok, near where Linklater island is marked on the chart. Still another, known as Epiullik, has it exit northeast of

Read island. (1) The Eskimos sometimes gather at Epiullik in the autumn. More often they assemble at the mouth of the Okauyarvik creek a little farther east, in a well-sheltered harbour where Rae marks '15 May.' Bearded seals abound both at this place and at Epiullik in the autumn, lying on top of the young ice. Okauyarvik is an excellent place from which to start the overland journey to Prince Albert sound in the spring, though the Colville hills can be crossed almost anywhere by sled. The Okauyarvik creek has its source in Lake Kigiaktallik, one of the larger lakes in the Colville hills, and winds about in a roughly SSW. direction for some 40 miles before it finally reaches the sea. A few miles east of it the Kimiryuak, probably the largest creek in this region, falls into Forsyth bay, and a little south of that again, in a rather deep bight just below Clouston bay, falls the Kogluktok river. Where the coast approaches nearest to the Liston and Sutton islands there is a point called Nuvuk; but beyond this the Eskimo names for the salient topographical features have not been recorded. The

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"1. Between these two streams apparently is the district called Iglulik; (Read island, (or Beads island, for the charts have both names; the natives call it Kigiktanneuk) lies about three miles off the shore, and consists of low gravel terraces of dolomite, with here and there boulders of diabase and granite.)

whole coast from Ingnerin to Lady Franklin point consists of a low gravel ridge, for the dolomite which protrudes in high cliffs farther to the west continues inland when the coast turns south, and the different streams from the interior have to cut deep channels through it on their way to the sea. [26]

In the strait between Puivlik and Noahognik lie the Liston and Sutton islands. Really there are three islands, called by the Eskimos Ahungahungak (Liston island), Putulik (Sutton island), and Illuvillik; all three are included in the general name Ukallit. The two former islands have high dolomite cliffs on their northern and southern faces, and much broken ice gathers around them in winter. Seals, both rough and bearded, are very numerous, so that the Eskimos from both sides of the strait have made this place their winter resort. The Puivlik natives generally make their way along the coast first to Nuvuk, for from there they can cross over in a single day; otherwise it would be necessary to camp one night on the ice, and a gale at this time of the year (December) might cause a great crack to open up and engulf them.

The only member of the southern party of the expedition who travelled along the south coast of Victoria island east of Lady Franklin point was Mr. Frits Johansen, one of our biologists, who was there in March, 1916. 'The Miles islands,' he writes,

'consist of diabase with the typical formations of this region, steep and high cliffs on the south and east, low and flat on the north and west. Except in pockets and on gravelly slopes the vegetation was very poor. Few animals occur here, but we noticed tracks of foxes, wolverines, lemmings, hares, ptarmigan and ravens, as well as caribou tracks, it being the time of their spring migration. Only the middle islands contained any driftwood to speak of, and they only on the north and west sides; it was there also that the usual signs of temporary Eskimo encampments were seen, tent-rings, wood-gatherings, and the like, showing that the Eskimos, like myself, used the islands as a pathway from the mainland to Wollaston land. The ice was often very rough and screwed up around the islands, especially where the coast was steep and rocky, but it seemed to have been safe for passage from November on.

Richardson island, further east, consists solely of diabase. Facing Coronation gulf, there are perpendicular cliffs several hundred feet high, impossible to scale and dropping clear to the water; but facing the sound are gentle slopes of smooth rock clear to the beach, covered more or less with gravel and vegetation. Also the higher land in the interior of the island has good vegetation right to its top and is rather easily scaled from the north side, especially where creeks come down. Numerous caribou were seen here in larger or smaller herds climbing or grazing on the slopes on both sides of the sound. In the sound itself between Richardson island and the coast of Wollaston

land are a number of islands. Two, at its mouth, mark the gateway coming from the west, and another half-way up the sound marks the narrowest place and divides it into a northern and a southern arm. The northern route is much the shorter, and along it were found tent-rings of the Eskimos and their meat-caches.

Murray point is a rocky peninsula of diabase overlying limestone or dolomite, which itself lies on a bed of sandstone. It is connected with Wollaston land by a series of lagoons, sandbars and tundra swamps, over which the Eskimos portage. It was here that I met three families of natives who were living in snow huts in Wellbank bay, where they had been sealing since the autumn of 1915. Some of them had visited the natives of Bathurst inlet that winter, and all had fairly civilized implements, hardly anything being made of copper; there were even guns and ammunition. A few days journey to the eastward, they told me, lay a river named Hagavaktok, which is open till late in the fall and is the only considerable stream along the whole coast to Simpson bay. This Hagavaktok apparently flows into the sea in the neighbourhood of Byron bay.

The coast of Wollaston land opposite Richardson island consists of steep, high cliffs of diabase, which change a little further west to sandstone ridges that slope gently down to the beach, but rise more quickly inland to a height of about 100 feet. This extends as far as Lady Franklin point. The land along here is more or less covered with gravel, boulders and vegetation, and shows the usual [27] signs of Eskimo settlements, of which

the most remarkable were large sandstone slabs laid on edge to form rude rectangular shelters for the hunters. Tracks of caribou were numerous in this place. The 'Mackenzie river' is really a series of creeks that issue from a system of swamps, ponds, and lakes a little way inland. Except on a small basalt island at the mouth of this 'river,' where I found meat caches made from boulders, there were no signs of Eskimo encampments either at the mouth or up inland along the 'river.' A short-cut portage across the base of Ross point is known to the local Eskimos, and I also used it to great advantage. From Lady Franklin point to Wellbank bay, the coast is almost entirely void of driftwood.'

Such then is the character of the Copper Eskimo country in so far as we were acquainted with it. Those portions of the mainland and of Victoria island which we did not visit will probably be found to differ in no important respect from the regions already described."

where the island was supposed to lie, I should have been able to see it; but there was no sign of anything but sea ice. In the spring of 1911 we crossed by sled in a direct line from Bell Island for Point Tinney. This should have taken us across the corner of Clerk Island as it is plotted on our charts and again we saw no signs of it. I think it is clear, therefore, that either Clerk Island does not exist or else it is at some place remote from that laid down by Richardson."

2: Stefansson--18 (1908-12) 1914 Copper Eskimo
116, 133

"Along this coast as far east as Crocker River the Melville Mountains run approximately parallel to the coast, from three to ten miles inland. In some cases the foothills proper come right to the coast, in others there are stretches of comparatively low although rocky and hilly country. Between Crocker River and Inman River the mountains get farther from the coast and apparently lower. Richardson estimates the Melville Mountains in general to be about five hundred feet high, but I found, in the spring of 1911, that standing at sea level at Bell Island near the southwest corner of Victoria Island, I could see the mountains on the mainland up to Point De Witt Clinton, and even there it was apparently rather a fog or clouds that obstructed the view down, after the mountains ran properly below the horizon. This means that the Melville Mountains should be.... between fifteen hundred and two thousand feet.

On his first journey along this coast, our only predecessor, Sir John Richardson, saw to seaward near the mouth of Crocker River, what he considered an island lying about twelve miles off shore. He named this Clerk Island. On his second voyage in 1848, apparently Sir John did not see Clerk Island. No one else has traversed the coast, but both Collinson and Amundsen passed at a considerable distance out to sea and neither of them saw the island. In the spring of 1910, we were fortunate in the neighborhood of Crocker River, in having in general clear weather and with my field glasses I used to climb high hills near the coast every few miles and look to seaward hoping to see the island. Had there been an Eskimo village twelve miles to seaward

2: Stefansson--19-20 (1908-12) 1914 Copper Eskimo
116, 133

"At Nelson Head the land rises rapidly to a height of at least two thousand feet two or three miles back from the beach. The south quarter of Banks Island may be considered high, although the extreme south appears to be the highest, and there is a gradual slope to the north, or at least that is what one gathers from what the Eskimo tell us, supplemented by the accounts of Collinson and M'Clure. Cape Kellett at the southwest corner of Banks Island is a long low sandpit and back of it to the eastward the land appears low. As far north on the west coast of Victoria Island as the Eskimo at present range, which need not be considered to be farther north than the latitude of 72°, the coast line is mountainous although the mountains are not very high. From the information of the Prince Albert Sound people this mountainous character is continued well into the country. We crossed the Wollaston Peninsula approximately in longitude 113°30′ west, and found it to be mountainous also all the way across. Our route was through a sort of a pass and there seemed to be higher mountains on either end. To the east there was an especially conspicuous range which had never been seen by white men before and as it appeared as a whole to have no native name, we called it the Museum Range to commemorate the connection of the [20] American Museum of Natural History with the expedition. From Eskimo report we learned, however, that there is a belt of low land stretching across Victoria Island approximately straight east from the foot of Prince Albert Sound to Albert Edward Bay. This strip consists of the valleys of the two rivers that are probably the largest in Victoria Island: the Kagloryuak which heads near the

center of the Island and flows west into the foot of Prince Albert Sound and the Ekalluktok which heads in the same vicinity with the Kagloryuak and flows east into Albert Edward Bay. It seems from Eskimo report that the eastern half of Victoria Island is in general low. This is corroborated so far as they go by the observations of Rae, Collinson, and Lieut. Hansen of Amundsen's expedition."

2: Stefansson--20 (1908-1912) 1914 Copper Eskimo
116, 133, 137

"The country between the 118th meridian and Coronation Gulf can scarcely be called mountainous but rather high, hilly, and rocky. There is an abundant vegetation of grasses, mosses, and lichens in the low places, but the high hill tops are in many cases barren on account of their rocky character. There are some rivers of size, but the details of them are unknown to us except that we were told that Rae River heads in an oval-shaped lake, apparently about twenty miles long that lies south of Staypleton Bay which, by the way, is not nearly so deep a bay as the maps indicate. There are commonly the smallest of dwarf willows said to be found anywhere north of the Rae River, and that river itself is not well supplied, but the Richardson River which has its mouth just south of that of the Rae has, we were told, considerable growth of willows in its valley and this we verified through finding heaps of drift willow at its mouth."

2: Stefansson--20-21 (1908-1912) 1914 Copper Eskimo
116, 132, 133

"The Coppermine, as elsewhere described, is well wooded. It is one of the swiftest large rivers of the world and is therefore never likely to be commercially valuable for anything except water power. It is practically a continuous rapid, but there are no real falls in it, not even the so-called Bloody Fall which is really a shelving cascade or rapid about six hundred yards long. On account of the general rocky character of the country, the valley of the Coppermine is much narrower than would be expected from the volume of water it carries, and the stream itself runs through a confined bed and is seldom over three hundred yards wide and that only in shallow places, while one hundred thirty yards may be considered its average width between Kendall River and the sea while there are many places much narrower than this. Being the swiftest of the great northern rivers, the Coppermine is also peculiar in the roughness of its ice in winter. What apparently happens is that first the river freezes over to a greater or lesser thickness of ice and then the rush of the water causes this original roof of ice to break down and cave into the water. The swift current seizes the blocks of ice and whirls them downstream until something occurs to make a [21] blockade and there they are heaped together on edge and in every other way while level ice again forms over the open water which has just been swept clear. A few days or weeks later another cave-in may occur where the ice lies smooth and the same process is repeated. But where a jam has once been lodged and cemented together there the ice will remain approximately unchanged all winter. As the season advances the water in the stream bed gets less and less. In

many places in the Coppermine there seems to be a sort of winding secondary channel in the bed of the river proper so that towards spring there is really only a little creek running through this curved and ice-roofed water course. Eventually the roof over even this sometimes caves down, but usually only after the ice becomes so thick (say over a foot) that it does not break small and float in cakes as the younger ice did earlier in the year. The current is not so strong late in winter, with the result that this last cave-in produces pits and valleys in the river ice proper. In the centers of some of these the ice is eight or ten feet below the general level of the river in the months of March and April. In the spring when the thaws begin, it is along this channel that the melted snow water first begins to run and we found in the first week of June, 1910, that where the rest of the ice of the river was comparatively solid, this creek had commenced flowing and had eaten through the ice so that although the water had not risen sufficiently to flood the river as a whole, nevertheless a crossing could be made by sled."

2: Stefansson--21 (1908-1912) 1914 Copper Eskimo
116, 133, 221

"The popular summer hunting district which lies between Bear Lake and the Coppermine River north of the parallel of 66° is largely Barren Ground on account of its high and rocky character, although trees of good size are found in all the creek beds round about. East of the Coppermine too, so far as we know it, the land is high and rocky and devoid of trees for the same reason."

2: Stefansson--21 (1908-1912) 1914 Copper Eskimo
116, 133

"If one walks southward or southeastward over this country in foggy weather or at night one will often go up so gradual an incline that the country seems level, until suddenly one comes to precipices where it is necessary to scramble down forty to sixty feet of cliff and talus slope. If the walk be continued southward, this experience will be repeated."

2: Stefansson--21-22 (1908-12) 1914 Copper Eskimo
116, 133

"The south shore of Coronation Gulf averages much higher than the north shore. A striking feature of the topography south of the Gulf is a series of rocky terraces. If one walks southward or southeastward over this country in foggy weather or at night one will often go up so gradual an incline that the country seems level, until suddenly one comes to precipices where it is necessary to scramble down forty to sixty feet of cliff and talus slope. If the walk be continued southward, this experience will be repeated.

Apparently the character of the bottom of Coronation Gulf is similar to the character of the land south of it. There are many times more islands than the chart indicates and these lie in chains extending from the west side of the Gulf eastward or northeastward. Most, if not all of these islands have precipices to the south or southeast and slope down gradually [22] to the north or northwest. There is deep water close up to their precipitous faces while from their low north ends dangerous reefs extend. There are many boulders of all kinds found on the surface of some of these islands. The islands themselves seem chiefly basaltic and the cliffs are typical columnar basalt. In a few cases we found the basaltic upper portion of the island underlain by stratified limestone."

2: Stefansson--22-23 (1908-1912) 1914 Copper Eskimo
116, 133, 313

"Before quitting this geographical discussion it is worth while to comment especially upon the anomalous economic importance of the Mackenzie River to all the district west of Coronation Gulf and east of Point Barrow. Not only does the huge volume of warm water temper somewhat the climate at the immediate mouth of the river and alter the seasons to a degree, but the river also supplies building material for the construction of houses for more than one thousand miles of coast and material for the construction of the framework of boats and for all the smaller wooden things that the Eskimo need. Most of this wood comes from the Liard branch of the Mackenzie River. Although a great river, the Liard does not bring down as much driftwood as does the Peace or the Slave and it is possible that even [23] the Athabaska River may carry as much wood as does the Liard: but unfortunately practically all the wood brought by the Peace and Slave is deposited on the shores of Great Slave Lakes. On neither of these lakes is the driftwood of any considerable economic importance while on the Arctic coast it would be of incalculable value to the Eskimo, should they survive for any considerable period, or to the white men, should numbers of them ever come to occupy the coast."

2: Stefansson--39 (1908-12) 1914 Copper Eskimo
116, 133

"Ship's timbers and pieces of wreckage which they recognize as belonging to the 'Investigator' have been found in Prince of Wales Strait at various points north of Ramsey Island. This shows not only the fact that the vessel has been broken up, which is not particularly interesting as it could have been surely predicted, but also the more interesting thing that the winds or currents, or both, in this section are such as to bring drift materials down from the north into Prince of Wales Strait. From the scarcity of driftwood on the south coast of Banks Island and Victoria Island and from its abundance in Prince of Wales Strait, as described by both the English navigators, it seems probable that this wood must have passed from the Mackenzie River north along the west coast of Banks Island and east around its north end."

2: Stefansson--43 (1908-12) 1914 Copper Eskimo
116, 133

"In Coronation Gulf itself there is comparatively little driftwood and most of it derived from the Coppermine River, doubtless. The Coppermine does not bring out much wood commonly, for although it flows through well-forested country, it is a country of solid rock in general, the erosion is slight and it is only in a few places that the river meanders over flat, wooded, bottom lands. It is no doubt on account of the prevailing northwesterly winds that we found much less wood on the west shore of Coronation Gulf than on its south shore, and it seemed to us that there was rather more wood on the island chain that runs east from near the mouth of the Coppermine than on the mainland itself. No doubt a party journeying by boat in summer will find no fuel difficulties, but while the snow was deep in winter we used to keep an eye open all day for any stick we might see and by that means we used to get together enough in a day to furnish fuel for camping at night.

On one of the islands, however, we saw a large log of cottonwood. The chances are that this stick came from the Mackenzie River; surely it could not be of local origin in Coronation Gulf. While it is clear that there is no steady and uninterrupted eastward current sweeping from Beaufort Sea into Coronation Gulf it seems that the prevailing trend of the currents must be more easterly than westerly or else how could this stick get to where we found it. There might well be a current from the west into the Gulf, however, without much driftwood coming in, for the northwesterly wind would naturally drive it ashore in the narrow straits. The course of a drifting stick is evidently a

resultant of two forces, the one exerted by the current, the other by the wind."

2: Stefansson--43-44 (1908-12) 1914 Copper Eskimo
116, 133

"The Eskimo told us that a few years ago they had found a stranded bowhead whale on one of the islands of Coronation Gulf and in it they had found what must have been a brass whaling iron. This whale must clearly have been shot by the whaling ships in Beaufort Sea and its carcass may have [44] been transported to Coronation Gulf by the currents and winds. It is, on the other hand, possible that the animal may have been merely wounded and may have made its way into Coronation Gulf before it died."

3: Rasmussen--9 (c. 1923) 1932 Copper Eskimo
116, 122, 133

"The coast of the mainland, with Queen Maud Gulf, is very little known, and yet it is one of the most interesting along the whole of the northlands of Canada. Thousands of small smooth-worn gneiss islets protect the low land from the sea and the enormous masses of ice, with the result that on the landward side of these islands we had an exceedingly pleasant trip for the rest of the way, not a sign of pack ice, and sufficient snow to make the going perfect. There are crowds of game on land in the proper seasons, and as yet the spring and autumn migrations of the caribou especially seem to be quite undisturbed. Quite a number of rivers of considerable size provide means of communication for the roaming caribou hunters, and here and there also provide splendid trout fishing. When we passed along the coast, however, we did not meet any people, for at that time of the year they are still in the interior. I knew that later on in the coming winter I would find most of them round about Kent and so did not waste time on going to visit them now; we kept on at the same speed as long as we had provisions and dog-feed enough."

"The Arctic Coast from the Mouth of the Ti-her-Yuak River to the Mouth of the Copper-mine River

The coast-line near the mouth of the Ti-her-yuak River is formed of crystalline or metamorphosed rocks of the same general character as those of which so much was seen on the route northwards from the Ti-her-yuak Lake. A single specimen was taken close to the river mouth; for if a hundred specimens were collected they would all differ slightly but immaterially, and one was sufficient to establish the important fact that the pre-Cambrian rocks of North America extend to the Arctic coast at this place. [262]

On commencing our journey westwards along the coast over the ice, and with the mainland shore to the south, we found that small rocky islands almost destitute of vegetation were numerous, scattered at a little distance from the shore of the mainland, which appeared as a long, low, undulating ridge of rocks.

There was much evidence of the great ice-sheet having moved in a northern direction here, as there were deep grooves scooped out, and the rock surfaces of the islands were much striated. It was also noticed that the rocks, similar to those on the mainland, were all abruptly broken off to the north.

On the 18th of May, quartz rock and granitic or gneissose rocks with much quartz were conspicuously observable in bands and patches, with smoothings and deep striations.

Continuing westwards to White Bear Point in latitude 68° 5' 27", we found the coastline very low but stony, with rocky knolls and intervening small flats. The rocks were smoothly glaciated, and quantities of small loose stones and sand were seen.

On the 25th three Eskimo met us with a few copper articles and a lump of native copper about 2 lbs. in weight. This native copper, from which needles and other domestic implements are made, is obtained by the Eskimo from islands to the north--Victoria Land, and other localities in higher latitudes.

At the portage across Kent Peninsula we found the rocks still similar, but giving indications of change of surface level in very recent times, as beds of recent marine shells (1) occur at about ten feet above high-tide level. Similar patches of shells were seen

1. Saxicava artica and Cardium islandicum.

until June 10th, and some occur among the soil or gravel on hill-slopes as high as 500 feet above sea-level.

On the 31st of May we crossed the divide on the Kent Peninsula portage and found the country very hilly and rocky. There was one isolated hill of quite a precipitous character. Photographic views are given to show the features of this area. During our stay here, latitude 68° 32' 46", on the 2nd of June, I ascended the precipitous hill, Har-li-ar-li,

which is 360 feet high and has a flat top. The rock was a good deal broken on the surface, and showed no evidence of the passing of an ice-sheet.

The rocks, however, had now changed in character, as the granitic or gneissic rocks that had characterised the region through which we had passed from the Ti-her-yuak Lake in latitude 66° had given place to a decidedly igneous rock, which proves to be a coarse-grained ophitic dolerite. (See Description of Rock Specimens, No. 4.) There were, however, at this place transported boulders of the previously traversed rocks.

On the 3rd of June, near a lake on the isthmus of the Kent Peninsula named It-ĭb-lĕr-yuak, many patches of marine shells were observed. The shells were similar to those seen on the 30th of May [263] at Portage Inlet. The occurrence of marine shells on coastal slopes may be accounted for otherwise than by coast elevation, for sheets of shore ice are capable of pushing up portions of the seashore in a frozen condition, and thus shells may be left on the land at considerable elevations above the sea-level.

On June 5th we found the country rock like that at Mount Har-li-ar-li. It was here to be seen in a horizontal sheet and much jointed. At about four miles distance we again observed the pre-Cambrian gneissic rocks, which doubtless underlie the sheets of dolerites.

At the mouth of the I-lu Inlet, where we arrived on June 6th, the land is low on the north, but high and precipitous in many places on the south shore.

There are two unusually lofty hills on the south-western shore of I-lu Inlet, one named I-ta-wing and the other U-wei-u-ullig, the latter of which is the highest, having an elevation of about 6000 feet, of which about 150 feet is formed by a perpendicular rock precipice.

On the 7th, in latitude 68° 12' 07" the coastal land was high and rocky and even mountainous in character, and on the 8th we camped at a small bay, overlooked by a hill that I ascended on the 9th, and found to be 840 feet above sea-level.

A long slope of flat rock ascends to within 150 feet of the summit, and this is a flesh-coloured granitic mass dipping west at an angle of about 30°. It is a felspathic grit containing much well-rounded quartz in grains with largely decomposed felspar and scaly secondary mica. (See Description of Rock Specimens, No. 5) The surface of the rock is smoothed and grooved by ice action, but not striated. The crest or summit ridge of 150 feet is formed by a doleritic rock similar to No. 4 on Mount Har-li-ar-li and to that in the vicinity of It-ĭb-lēr-yuak Lake. The rock on this summit is a hornblende diabase. (See Description of Rock Specimens, No. 6.) It is also smoothed and grooved, but not striated.

It is impossible to say in which direction the ice moved at this place. The rocks where precipitous have their faces to the east, west, south, and north-west.

On the 10th of June I examined a precipitously-cut hill about four miles from our camp. The cliffs faced due west, and were opposite to the face of the 840 feet hill that I had ascended the day before, and from which I had obtained the rock specimen No. 5. Between the two hills extends a valley of about three miles in width, containing two long narrow lakes, and through the valley the surface water flows northwards. The rock forming the valley bottom is a fine red sandstone consisting of rounded grains of quartz with a small amount of cementing material. (See Description of Rock Specimens, No. 7.)

This sandstone rock is in places conglomeratic, and is there full of quartz pebbles. The felspathic grit (No. 5) and the red sandstone (No. 7) seem to pass into each other at a certain altitude, while the summit capping of the hill is the hornblendic diabase (No. 6). [264]

It appears to me that the valley between these two hills has been formed by ice-action, which has taken away nearly all the doleritic rock of the summit levels, leaving only the crests of the two hills, and No. 5 has been removed also, except where it remains between No. 7 and No. 6, while the sandstone rock, No. 7, remains to form the bottom of the valley. It is to be noted that the felspathic grit, No. 5, contains quartz pebbles as well as the sandstone. Briefly, it may be stated that the crests of the somewhat high hills in this area are composed of the volcanic doleritic rock, No. 6, while at lower levels is the grit, No. 5, and at the bottom of the valleys is the sandstone, No. 7, though, it should be added, this last rock is not always exposed.

I could not ascertain in which direction the ice-sheet had moved, but from the conspicuous smoothing and grooving, it is evident these hills have been covered by it; and it seems to me remarkable that the whole of the uppermost rocks have not been removed by the powerful glacial action to which they were subjected. Possibly they were exposed before the ice-sheet made a general movement.

The origin of the small, flat, generally circular, gravel terraces, which have been noted by every one who has visited the Barren North Land, is not very apparent. I noticed and watched the débris, gravel, grit, and sand that issue from a deep bank of snow. It ran down and was settling in and filling up a small circular hollow in the ground. One might say that a miniature moraine from a miniature glacier, the snow-bank, was terminating in this hollow. It now appeared to me that the ice-sheet had moved in a southerly direction over this area.

On the 13th the land seen five miles to the south was very rugged and rocky, and it continued so on the 15th, when we traversed the portage across Cape Croker, where we found a fine-grained granitic or gneissic rock.

On the 16th we reached Barry Island, which one of my Eskimo had described as the best place for copper. He now said copper was more plentiful on an island six or eight miles north of Fowler Bay. However, two pieces of native copper were found in the

evening.

The next day we searched for copper on the north-west shore of the island.

The main rock of the island is a fine-grained basalt which Dr. Flett described as granular, holocrystalline, and non-porphyritic, and a good deal decomposed. (See Description of Rock Specimens, No. 10.) The rock, although hard, is easily broken in all directions by a tap of the hammer. The summit of the island is, however, formed of a rock of the character of No. 6, and is described as coarse-grained ophitic dolerite with plagioclase and augite, and perhaps a few grains of olivine. The ophitic structure is very perfect. (See Description of Rock Specimens, No. 11.) [265]

The underlying basalt dips west at an angle of about 25°, and it is in this rock that the native copper occurs. The copper is plentiful, for the quantity we obtained was found after but a brief search, and on a neighboring island, Kun-nu-yuk, a mass of copper had just been found, so large that a man could hardly lift it. There also copper is often found in the tide-way. The whole of the lower levels on Barry Island are covered with débris from the basalt, and where the rock has been disintegrated by weathering, copper has fallen out, so that flakes of the metal may be found along the sea-shore. In many places, too, green patches indicate that nuggets or flakes of copper have recently fallen out from their matrix.

The copper-bearing rock also contains crystalline quartz, some of which forms

beautiful anethystine veins, of which some specimens were taken. There is here some further evidence of coastal elevation in the occurrence of saucer-shaped lines of water-worn débris at from twenty to forty feet above the present level of high tides.

The question whether it would ever pay to work the native copper of these regions remains for the consideration of experts. I have always understood that native copper occurring in small flakes or nuggets and sparsely distributed, is of but little practical value, and that copper can only, as a rule, be successfully worked from ores that are rich and easy of access. Much depends doubtless on its abundance and regularity of distribution. This island, Barry Island or Iglor-yu-ullig, is several miles in length, and perhaps three or four miles across. The Island to the south-south-east, Kŭn-nu-yŭk, is still larger, besides which there is an island to the south-west which has given much copper, and there are copper-yielding islands to the north. The copper-bearing formation holds good everywhere except on the summit cappings of the islands.

On the 18th of June we reached the most easterly land of Bathurst Inlet, which is very hilly and rocky, some of the hills attaining an altitude of 1500 feet. Between the hills are grassy flats, but at present they were but swamps.

On the 23rd, on our way across Bathurst Inlet, we approached a flat-topped precipitous island very much resembling a kopje. When near to it I noticed a change in its

rock formation, and saw that there was a bed of limestone about fifteen feet thick underlying a capping of igneous rock of about 20 feet thickness.

On further examination I found the limestone which is thinbedded and horizontal, in places 60 feet thick. The summit, igneous rock, is an ophitic dolerite similar to the cappings of the islands and hills previously seen. (See Description of Rock Specimen, No. 13.)

Although fossils were diligently searched for, none were found in the limestone.

The dolerite is columnar in places, and large masses and much smaller débris have fallen to the base of the precipitous cliffs formed [266] by the limestone and dolerite. Southwards from the island mass a long spit of the dolerite rock projects into the sea, and it is seen to be very much smoothed and grooved, and the striae, all trending to the south-south-east, are very numerous.

About five miles beyond this limestone island we passed a small basaltic island on which two pieces of copper ore were picked up. It seems as if copper is to be found wherever this basalt occurs.

On the 25th June we camped on the north point of Lewis Island.

With the exception of some precipitously-cut rocks near our camp, this island is formed of the same partly-decomposed basalt as Barry Island. It is described as fine-grained, granular crystalline, decomposed basalt. (See Description of Rock Specimen, No. 15.)

Although we did not find so much copper here, the green marks on the rocks were more numerous, but we did not spend an hour altogether in the search. One of our Eskimo knew of a large mass of copper on the south-west shore of the island, which he stated to be as much as five feet in length and three inches thick. It protruded from the rocks under the water it was said, but there was too much ice for us to find the copper. A piece of quartz with copper ore and native copper was picked up on the seashore. Another specimen of the copper-bearing rock here is decomposed basalt, fine-grained, and not unlike No. 15, but vesicular. (See Description of Rock Specimen, No. 17.)

In the bays of this island a regular succession of apparently old shore-lines can be seen. There are as many as eight, and although there are no shells, the fragmentary débris gives evidence of being water-worn.

On the 27th we rested at the north-west point of Lewis Island, where we again found the copper-bearing basalt, and accordingly we commenced a search that resulted in our collecting about 2 lbs. weight of copper. The metal appeared to be very persistent in its occurrence in the partly decomposed basalt of which all the islands we passed that day consisted. The flakes of copper seemed to be always vertical when in their rock matrix. The rocks of this island, where they are not disintegrated, are well smoothed by glacial action, and the striae are numerous and distinctly trend south and south-east.

Cape Barrow was reached on the following day, and this prominent headland, pointing due north, we found to consist of the felspathic gneissic rock of which so much had been seen. It is here very red and handsome in appearance, and is rounded and smoothed.

The islands lying off the Cape are basaltic, and the rock appears to have a columnar structure, and I think it overlies a bed of limestone. The precipitous cliffs of these islands are very similar to those of the limestone island previously seen. The land behind the coast-line is here very rugged. [267]

On the 29th June we arrived at a place called Ūt-kūs-kĭk, where there is a remarkable rock from which the Huskies have for generations made their kettles. The mass of this rock, which we may call kettle-rock, was situated about five miles from the site of our camp, and occurred as an enclosed mass in the red granitic-looking rock. It is so soft that it can be easily cut with an axe, and is of a greenish grey colour with a smooth steatitic feel. The rock is indeed a talc chlorite schist. (See Description of Rock Specimens, No. 18.)

The country at this part of the coast is rocky in general appearance, but grassy valleys, now somewhat boggy, abound.

On the 3rd July we encamped on the south-east side of Gray's Bay. The land forming the opposite and northern side of the bay is a promontory terminating in a point to the north-east, off which lies Hepburn Island.

Our camp was on the pre-Cambrian gneissic rocks, but on the promontory across the bay four miles distant and four miles from the north-eastern termination, we found red sandstone underlying what resembled sheets of basaltic rocks which, with precipitous cliffs, prevailed at the surface both throughout the promontory and on Hepburn Island. The rock is described by Dr. Flett as fine-grained, well-foliated hornblende schist. (See Description of Rock Specimens, No. 19.)

We found the land near Epworth Point on the 6th very rocky, but the rocks much smoothed and striated.

Further west, precipitous basaltic rocks are seen overlying the felspathic granitic or gneissic rocks, and at two places we observed an occurrence of the talcose kettle-stone.

On the 8th of July we reached a part of the coast about twenty-seven miles west of Epworth Point, where the coastal country may fairly be called beautiful, with long, grassy, gently-rising slopes extending inland from sandy and gravelly shores that form the coast-line.

The rocks seen were slates with good slaty cleavage, horizontally bedded and capped by basaltic rocks, of which large detached masses lay balanced on narrow ledges of the slate.

On June 15th the hills on the other side of the Coppermine River were clearly visible

from the rising ground at the back of our camp, and they did not appear to be very distant.

Doleritic rocks again formed the summit levels, and consisted of coarse-grained ophitic dolerite with augite. (See Description of Rock Specimens, No. 21.)

On the 19th of July we reached the mouth of the Coppermine River.

The country we had seen along the coast for several days was of a very pleasing character in the Arctic summer, long, grassy slopes rising from the sea-shore, with occasional patches of willows that stood out conspicuously owing to their extreme greenness."

'ROCK SPECIMENS FROM THE NORTHERN PART OF CANADA--FLETT

1. A decomposed gneiss, consisting of quartz, felspar, and chlorite after biotite. The felspar is mostly orthoclase, but plagioclase is also present, and decomposition of these two minerals has given rise to much secondary mica. Everywhere the rock shows abundant signs of mechanical deformation, and cataclastic structure is highly developed. The quartz is often crushed to powder, the felspar broken and torn up. Epidote and chlorite are frequent, probably both secondary after biotite.

2. A peculiar rock which may perhaps be best described as a hypersthene biotite granulite. It consists, for the most part, of orthoclase, plagioclase, and quartz. The quartz was proved to be uniaxial and positive, and forms lenticular or elongated masses which give the rock an indistinct parallel structure. It is not gneissose, however, but looks massive in the hand specimen. In addition to the minerals named there is a small quantity of biotite and of hypersthene. The last-named mineral was recognised by its cleavage, straight extinction, dichroism, and polarisation. It shows the usual decomposition into bastite. It is not common in rocks of this kind. Apatite, zircon, and iron are present as accessories.

3. Decomposed, fine-grained olivine basalt or anamesite, consisting of lath-shaped plagioclase and small grains of augite with a small amount of olivine which has passed into dark brown serpentine. There is also a good deal of iron oxide and secondary

limonite.

4. Coarse-grained, perfectly ophitic dolerite, with large irregular plates of purplish-brown augite, enclosing many small elongated plagioclase felspars. It does not seem to have contained olivine, and is a very fine example of ophitic structure.

5. Felspathic grit, containing much well-rounded quartz in grains which are sometimes 2 mm. in diameter, together with felspar, mostly somewhat decomposed. The quartz is granitic and not frequently sheared, and the cementing matrix between the grains [269] is full of fine, scaly, secondary mica. There are a few fragments which seem to have been derived from a felsitic rock.

6. Hornblendic diabase. Consists of plagioclase, felspar, and hornblende, which is partly uralitic, and probably after original augite, partly compact and apparently primary. There is also a little biotite and large plates of ilmenite, needles of apatite, &c. Most probably this was once an ophitic dolerite with augite and plagioclase, but if so the augite is entirely uralitised. See 13.

7. Fine quartzose sandstone, composed of rounded grains of quartz with a small quantity of cementing material. It contains also a few bits of felspar and grains of iron oxide.

10. Fine-grained, granular, holocrystalline, non-porphyritic basalt, a good deal decomposed. The augite has all weathered into chlorite and other secondary products. The rock does not seem to have been ophitic. Not unlike specimen marked 3.

11. Coarse-grained ophitic dolerite, with plagioclase, felspar, and augite, and perhaps a few grains of olivine. The ophitic structure is very perfect. In some ways this rock approaches gabbro, as the augite often has a diallage structure, but the ophitic character resembles rather that of the dolerites. It contains large irregular masses of ilmenite and a little biotite and apatite.

13. Ophitic dolerite, similar to the preceding, but more decomposed. There is a little biotite in this rock, and dark green hornblende, some of which is secondary after augite (uralite), but part is primary, and has formed on the surface of the original augite.

14. Coarse-grained pegmatite, consisting of quartz, orthoclase, plagioclase, and chlorite. There is also some fresh dark brown biotite and a little muscovite. The rock has been sheared, and the quartz is often broken up; in the hand specimen it has a somewhat gneissose character.

15. Fine-grained, granular crystalline, decomposed basalt. It consists of plagioclase, felspar, and small grains of augite, and is neither porphyritic nor vesicular. It has probably contained a little olivine, though that mineral is no longer present in the unaltered condition, but is represented by pseudomorphs of brown serpentine. There is also a good deal of iron oxide, partly weathered to limonite.

17. Decomposed basalt, fine grained and not unlike the preceding, but vesicular. The vesicles are filled with chlorite, quartz, and secondary sphene (?) after ilmenite, and a

peculiar feature of the rock is the occurrence of pale more felspathic zones around the vesicles. The rock has consisted originally of plagioclase and granular augite, but both these minerals are now much decomposed.

P.S. -- The mineral referred to above as iron oxide is really a copper ore filling veins and cavities. It is dark when fresh, buf weathers into green malachite. (Soluble in HNO^3, giving green solution, precipitated by NH^3, and dissolves to form dark blue fluid on addition of excess.) [270]

18. Talc chlorite schist with scattered grains of iron oxide.

19. Fine-grained, well-foliated hornblende schist, consisting of small crystals of horblende, grains of felspar, and some epidote, and iron oxides.

21. Coarse-grained ophitic dolerite, with augite, olivine, and plagioclase felspar. The structure is ophitic. There are large plates of ilmenite and some apatite. The augite is weathering to chlorite. Olivine is scarce, and is decomposing into serpentine."

11: Stefansson--215 (1908-1912) 1913 Copper Eskimo
116, 133, 487

"Dismal Lake....is one lake extending in a general east-and-west direction, with a length of about thirty-six miles, and the width varying from four or more miles down to a hundred yards or so. At the point where we struck the lake it is filled with willow-covered islands. Here we knew from Eskimo report that a ford existed, but the Eskimo who cross by it every year put up no guide-posts, and no trails are visible, so that it took me half a day of wading back and forth before the ford was discovered."

CHAPTER I

MATERIAL RESOURCES

Few people have been called upon to sustain life and perpetuate their race on such meagre resources as the Copper Eskimo. Even if they had been acquainted with agriculture the climate debarred it, just as it debarred the growth of trees except in two or three sheltered valleys along the southern fringe of their territory. It restricted not only the flora but the fauna, leaving the natives dependent for their food and for much of their equipment on one land animal, the seasonally migrating caribou, and two sea mammals, the foetid and the bearded seals, supplemented by such fish as they could capture in rivers, lakes, and bays. Ignorant of all metals except their native copper, which seemed to them only a malleable stone, and cut off from contact with any but neighbouring tribes, little or no more advanced than themselves, they had to build up their lives on the scanty resources provided by their own narrow environment, and rely on their own ingenuity to supply all their needs.

The resources provided by their environment fall naturally into four groups:

Wood
Stone (including native copper and other minerals)
Bone, antler, horn, ivory
Hides and sinew.

WOOD

The Copper Eskimo obtained their wood from two sources. First, there was the driftwood, mainly spruce and cottonwood, carried to the ocean by Mackenzie River far to the westward and borne by the winds and currents to Dolphin and Union Strait and western bays of Victoria Island. Then in the valleys of three rivers that flowed into Coronation Gulf, Coppermine, Napaktauktauk, and Tree, there stood scattered groves of spruce, small and stunted, a few miles from the coast, but larger as one proceeded south. Far to the southeast, too, near Thelon River, were other stands of spruce that the Eskimo from Bathurst Inlet and from the eastern shores of Victoria Island occasionally visited in their wanderings. Thus the Copper Eskimo had abundant wood to satisfy all their needs; but as driftwood was very scarce in many districts, and the standing timber on the southern fringe of their territory could be reached only after a long journey overland, which many natives were disinclined to make, manufactured objects of wood were among the commonest articles of trade and passed freely from one end of the territory to the other. Moreover, so crude were the Eskimo tools, and so great the labour of cutting down the trees and hewing the timber into shape, that any object of moderate size, such as a sled-runner, a table, or even a tent-pole, commanded a high price.[1]

The principal tools used in working wood were the adze and the whittling knife (*See* pp. 100 and 103). Bone or antler wedges, generally made for each occasion and immediately discarded, served to split small logs and planks; they were driven home with boulders. Lacking saws, the Eskimo shortened a plank in one or other of three ways: they hacked it with the adze; gouged it across with the grooving tool (*See* p. 100); or they drilled a line of holes across it with the bow drill.

[1] Cf. Stefansson, V.: The Stefansson-Anderson Arctic Expedition: Anth. Papers, Amer. Mus. of Nat. Hist., vol. XIV, pt. I, pp. [illegible], [illegible] et al., New York, 1914.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

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29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

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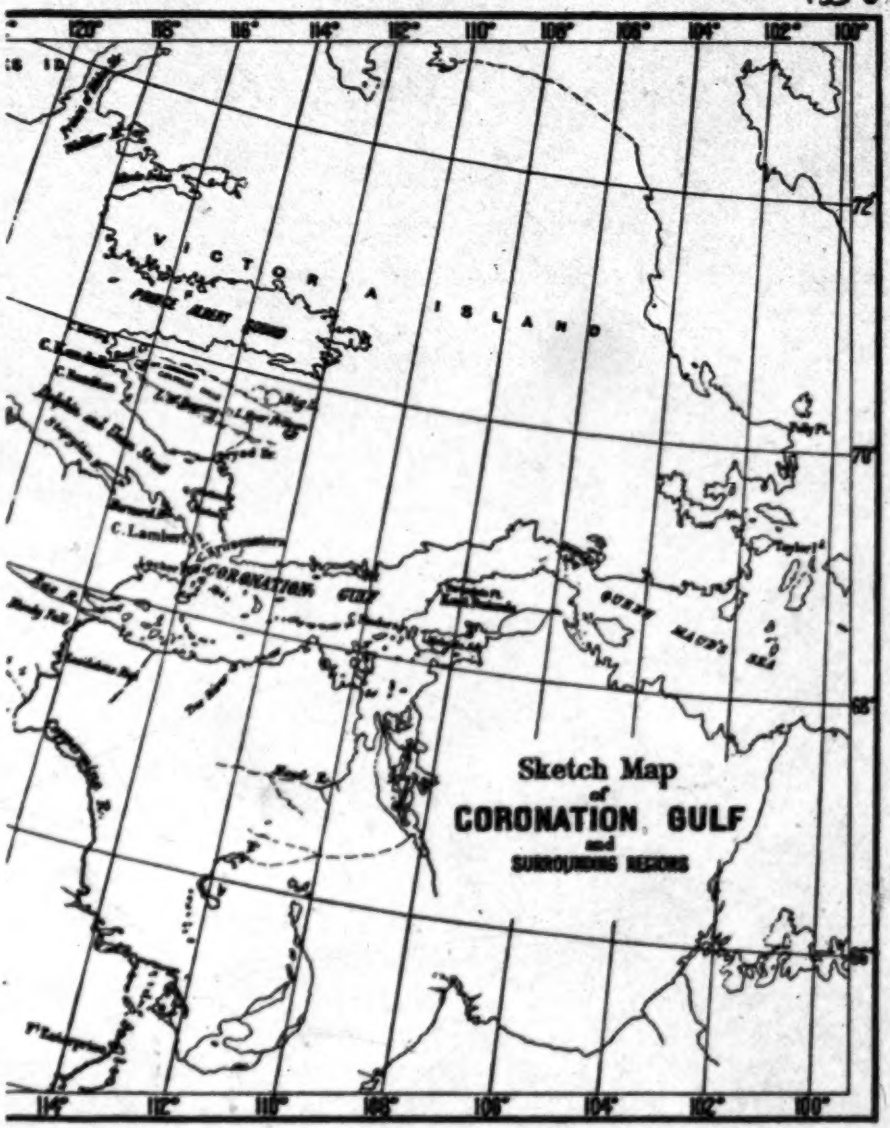

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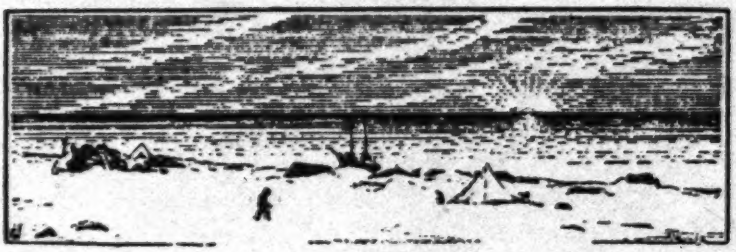
29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

ooo ging the shore and sounding at intervals with the lead. The fog had lifted a little and, as we rounded a low point, we sighted a canoe coming toward us with Anderson, our commander, paddling in the bow. Beyond, at the end of a narrow bay, the *Alaska* was anchored close to the beach, and two large tents gleamed white in the misty sunlight. Here at last was our harbour. But the channel up which we were heading contained hardly enough water to float the canoe
• 133 in which Anderson had come to meet us. The real entrance was a bottle-shaped gap beyond the low island on our left. We turned the ship about and ran down to it, only to find it blocked by heavy ice-floes. So once again we curbed our impatience and anchored under the lee of a small reef until either the tide or the wind should open up a passage.

ooo The fog was denser than ever the next morning, but the sea calm and unruffled. After a hasty breakfast we weighed anchor, and, running down to the barrier of floes, tried to force our way through. We charged it at full speed, and nosed the vessel's prow into the opening cracks; or we backed out and charged again, twisting this way and that wherever a dark streak of water marked the end of one floe and the beginning of another. Sometimes the bow of the *North Star* climbed right on top of a floe; but we clambered onto the ice, and pushed her off again with poles. Yard by yard we worked our way forward

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8



CHAPTER II

AN OUTPOST ON THE POLAR SEA

177 IN the summer of 1912 a pioneer trader cruising along the Arctic coast of Canada discovered, behind a low island, a tiny deep-water cove, afterward named in his honour Bernard Harbour. The cove is now the regional headquarters of three distinct organizations—the Hudson's Bay Company, the Anglican Mission, and the Royal Canadian Mounted Police; but when the *Alaska* and the *North Star* sailed into it, in August, 1914, the country was still bare
133 and seemingly uninhabited. Low, stony ridges, sparsely covered with mosses and lichens, concealed all the region to the south and west, and across the narrow neck of land that bounded the cove on its eastern side was a second inlet similar to our own, but less sheltered from the prevailing winds. On this narrow neck of land we decided to set up our station.
114 We spent two busy days unloading our cargoes onto the beach. A propeller blade of the *Alaska* had been broken against an ice-cake, and the engineer had

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

abandoned their huts. Those who had windows of ice in their houses removed them and passed their goods through the gap; and those who had no windows cut large holes in the walls, which they could fill up with a snow-block or two if they wanted to reoccupy the huts. But the Eskimos seldom returned to the same habitations; old houses remained deserted until the spring, when they melted slowly away under the warm rays of the sun. Passing travellers might occupy them for a night, but even they generally preferred to build new houses, which were warmer and more comfortable. Hence one could readily discover all the winter movements of these Eskimos by tracking down the villages they had successively deserted between October and May.

Our migration along the coast resulted in a new settlement of snow-huts a few yards out from the beach. It was too early in the winter to camp far from shore, for a violent gale might break the level ice-field into drifting floes. Even the light gale that sprang up four nights later produced a large tide-crack under two houses that lay more to seaward than the rest. Misfortune ruled that I should be sleeping in one of them. The snow-blocks cracked one after another, with loud reports like pistol-shots, and the walls split from ceiling to floor. Then the water poured up through the tide-crack and flooded the hut nearly to the level of the sleeping-platform. My hostess, stepping down to

29: Jenness E-5 (1914-1916) 1959
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relight the lamp, sank up to her knees in the icy slush; her terrified shriek made us leap from our beds in alarm. Fortunately the water rose no higher during the night, or we might have had difficulty in escaping to the land. As it was we were able to wait until daylight, when we cut a hole through the back wall and transported our belongings to a safer home beyond the reach of the tide.

I marvelled at the time that the roof of the dwelling did not cave in upon our heads. But a snow-hut is remarkably solid once the warmth inside has converted its walls to ice. Soon after this gale I visited the hut in which I was nearly asphyxiated a few weeks before, and the native who accompanied me stood on its highest block without disaster. He mounted cautiously, it is true, for even ice must be fairly thick to withstand a pressure of 150 pounds; and the walls of this hut were still mainly snow, for we had occupied it only one night. But it was a striking test of the solidity of a snow-house, and explained why the entire half of a dwelling may be cut away without disturbing the other half.

There were so many things of interest in our new settlement, so much that was novel and strange to record in my note-books each evening, that the days passed almost unnoticed. The Eskimos themselves knew nothing of days or weeks; they kept no reckoning even of the months, only of the changing seasons as they affected the food supply.

[p 42-A]

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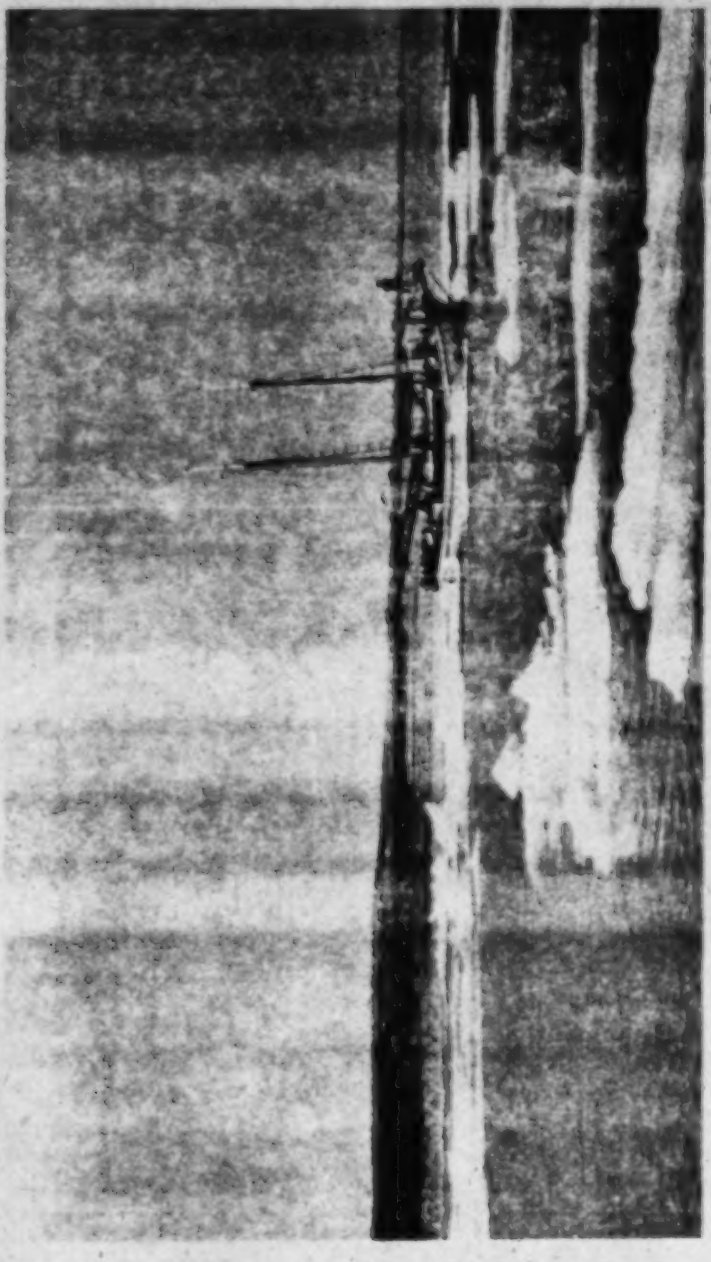

Photo by F. Johnson.

Running down to the barrier of floes, we tried to force our way through.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

123 on the first occasion by holding a private party at which they shared the white man's food—tea, hard bread, and chocolate. When I left them in charge again the following day they immediately trimmed the lamp, placed a pot of water over the flame to boil, and set out the cups for another afternoon tea.

784 These Eskimos of Dolphin and Union Strait forbade 252 any cooking of caribou meat on the sea during the 184 winter months, believing that it would cause the ice under their settlement to upheave and engulf them. Eskimos living farther to the eastward were less scrupulous, and often cooked caribou meat when they were camped on bay ice that was not likely to crack 133 under the stress of a winter storm. But a strong current passes through Dolphin and Union Strait, and new cracks and pressure ridges make their appearance 123 as late as the end of January. The regulation was therefore rigidly observed by the local Eskimos, who often warned us against infringing it at Putulik, even though their settlement was only a few yards from the shore. Palaiyak, my western Eskimo, who had outgrown most of these superstitions, was more annoyed than I that we should be compelled to eat our venison raw, or else carry it to Bernard Harbour, where our house was built on solid ground. We avoided the regu- 361 lation in the following winter by a subterfuge. The Eskimos then built their settlement closer to the beach, and the hut in which we were living had rock, not ice,

29: Jenness E-5 (1914-1916) 1959
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line raised by the mirage a few inches above the horizon. The air was calm and clear, the temperature comparatively mild, with the thermometer registering only —12° F. Everything seemed to promise fine travelling weather as we set about harnessing the dogs.

There were two toboggans in our outfit, besides the sled and dog-team of five that I had used throughout the winter. One toboggan, drawn by six of the expedition's best dogs, was for Anderson and his companion; the other, with seven dogs, for Johansen. We distributed our loads at the outset in the proportion of a hundred pounds for each dog, but they naturally became lighter every day we travelled. One of our tents had the ordinary A shape; the other, for Anderson's use, resembled a domed beehive, being modelled on the tents used by Eskimos and Indians in the north of Alaska. We carried two stoves for wood and two others for oil, since we might not find wood at every spot we camped. The rest of our baggage consisted of dog-food and man-food, sleeping-gear and bags of spare clothing. A rifle and a pair of snow-shoes for each man lay ready to hand on top of the loads, directly under the lashings.

The weather remained fine for the first week, and our daily run averaged about fifteen miles. We passed under Cape Lambert on the second day; its cliffs of cherty dolomite, rising to a height of eighty feet and extending for about a mile along the coast, appeared

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

as a notable landmark in the otherwise featureless shore-line. Farther east was a low stone monument set up by Sir John Richardson's party nearly seventy years before, although from its appearance it might have been standing but a few months. Time's ravages work slowly in the Arctic; M'Clintock's expedition to Melville Island in 1853 discovered hardly a trace of moss on the tracks of Sir Edward Parry's carts that had passed over the tundra in 1820.

We encountered our first caribou in Richardson Bay, near the mouth of the Coppermine River, where a herd of about a hundred were grazing on a ridge overlooking the frozen sea. Anderson and Palaiyak pursued them and shot three. We cached part of the meat under the largest boulders we could find; but since the wolverines would dislodge a stone that two of us could hardly lift, we covered the boulders with snow, and converted the snow into ice by pouring water over it. We hoped by this means to outwit the crafty animals and preserve a small stock of meat for Anderson's return journey. But they proved too much for us; they tunnelled under the surrounding snow and entered the cache from below, as we discovered a fortnight later.

Every hunter in the North develops a taste for the marrow in the leg-bones of the caribou; so it was not surprising that Anderson, Johansen, and myself, sitting round the camp-stove that night, should pile two dozen bones in our midst, and proceed to crack them on stone

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

anvils with our hunting-knives. Anderson then became strangely reminiscent, and related droll stories of his college days, of the Spanish-American War, and of his experiences on a former expedition to the Arctic. Suddenly he stopped, and Johansen and I returned to the marrow-bones. Nothing remained but fragments. I could account for four bones only, Johansen for only two; Anderson himself had slyly demolished the other eighteen. In fairness, however, I should add that he has always denied the accuracy of these figures.

The long, winding Coppermine enters the sea by two mouths, which are separated from one another by a low, grass-covered island capped with two diabase hills at its northern end. The river is here about three miles wide, but immediately narrows down to a few hundred yards. We encountered nothing but smooth ice for the first ten miles, so smooth that the snow had blown off it in many places. The dogs soon lost their tempers here, for they slid over the ice in all directions when the toboggans stuck fast on the tiniest snow-patch. Steep mud-banks hemmed us in on either side, sloping back to a level plateau in a series of cone-shaped pyramids. We came upon willows growing as high as seven or eight feet, the nearest approach to trees that any of us had seen for many months; and we passed two deserted snow-houses erected by some Eskimos returning from the Dismal Lakes early in the winter. Just as darkness began to close in we pitched our tent

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

some of the provisions. Palaiyak went out to hunt caribou. He returned in the evening empty-handed, but reported a curious experience exactly like one that had occurred to Sir John Richardson in this neighbourhood. While stalking a herd late in the afternoon Palaiyak noticed five wolves in front of him engaged in the same pursuit. One wolf kept far over to the flank; the others, in horseshoe formation, were driving the herd toward a distant cliff. The animals moved away from him so rapidly that he did not see the issue; but if we had troubled to search in the morning we should probably have found the mangled bones of the caribou at the foot of the cliff, and foxes devouring the last shreds left by the wolves.

Bloody Fall, below which we camped, is a dangerous rapid where the Coppermine River cuts through a dyke of hard diabase rock running parallel to the coast-line. The swift current keeps the river open in the severest winter, but the traveller can usually pass through the gorge on the ice-foot that forms under its western bank. About the fall the ice was piled up in broken masses, and lanes of open water here and there made it impossible to follow the river channel with sled and dog-team. We, therefore, crossed over to the right bank and climbed onto the plateau, where the soft, deep snow compelled us to put on our snow-shoes. Anderson gave a whoop of joy and leaped four feet into the air when he felt the familiar straps around

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

the night and renew the attempt next day, freighting his supplies in two relays. When I left them in the morning he was confident of crossing the river before noon; but so steep were the ridges, and so deep the snow, that they laboured for two days before reaching the nearer bank.

Meanwhile, at our old camp in the first grove of spruce trees, Johansen was greatly elated by an unexpected discovery. He told me, when I returned, that he had solved a problem that had baffled every traveller on the Coppermine from the days of Richardson to our own. East and west of the river stretch the barren grounds, stony or mossy, according to the varying conditions, but nowhere adorned by a single tree except the creeping dwarf willow. The tree-line follows the valleys, and on the larger rivers runs nearly out to the coast. On the Coppermine the most northerly stand of timber lies in the valley of a small creek six miles from the sea and three or four miles from the actual river-bed; south of this, groves of spruce, mingled with a little cottonwood, appear at intervals of every mile or two, the groves becoming larger, and the trees bigger, as one travels upstream. All the bigger trees in the northernmost groves are dead, and many of the smaller ones have dead and withered branches, so that the timber-line seems to be moving southward. Richardson attributed this movement to fires kindled by wandering bands of Eskimos, but the

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

were seeking out their mates, and a faint tinge of green had crept into the brown tips of the low dwarf willows that protruded above the snow. In the hills lay countless lakes teeming with trout and salmon, and herds of caribou grazed on the slopes and plains. Soon large pools would form around the margins of the lakes, and the unlocked waters race in foaming torrents to the sea. Everything beckoned us landward, to a joyous life in the open air. There would still be a few more snow-storms, succeeded by fogs and rain; later, dark clouds of mosquitoes would assail us night and day without rest. But there would be many days, too, of mild, clear weather when we could sleep beneath the open sky; and food was abundant everywhere, so that we could roam where we pleased, as free and unfettered as the caribou we hunted.

On May 9 our sleds climbed up the shore near the mouth of a large creek named Okowyarvik. The new life had begun.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

CHAPTER VII

IN QUEST OF THE TORMIAT

133 VICTORIA ISLAND terminates to the west in a long and wide peninsula, to which early maps gave the name of Wollaston Land. Low hills averaging about 800 feet high form the backbone of the peninsula, and many large streams flow radially north and south out of the innumerable lakes that fill the valleys and depressions among the ridges. A thick layer of mud covers the greater portion of the land, but near the coast-line are cliffs of dolomite through which the streams have carved deep gorges.

137 Not a tree rises anywhere. Mosses and lichens carpet the margins of the lakes, and here and there on the coastal plain grow patches of heather and dwarf wil-

29: Jenness E-5 (1914-1916) 1959
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low; but the hills are brown and barren, or sparsely clothed with a few creeping plants such as dryads, saxifrages, and oxytropi.

On this peninsula I planned to live six months, isolated with my little band of Eskimos. The life on the ice was ended; fishing and caribou-hunting were to be our sole pursuits. As Ikpuck's adopted son I could observe all the details of Eskimo summer life, following its variations from day to day as no traveller had done before me. It was for this purpose, indeed, that I had cut myself adrift from the rest of the expedition until the winter, when the strait would freeze over again and allow me to return to Bernard Harbour. In the back of my mind lay also another plan. Sixty miles to the northward was Prince Albert Sound, the home of an Eskimo tribe that I had not yet visited. Each summer a few of the Sound people met and traded with Eskimos from Dolphin and Union Strait somewhere in the interior of Wollaston Land, and Ikpuck, who was born in this region, promised to guide our party to their usual places of rendezvous. He arranged that we should travel first to the Lake of Dancing within the Colville Hills; later, if necessary, to the Big Lake across the divide or to Prince Albert Sound itself.

We had landed near Okowyarvik Creek, which flows into a long, narrow harbour sheltered from every gale by an island that extends across its mouth. It was the

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usual starting-point for Eskimos travelling to the Great Sound, since the hills immediately north were lower than at any other place either to east or west. Okowyarvik means "the Home of the Dryad," not the wood-nymph of that name, who could never find a home in this desolate land, but the *Dryas integrifolia*, a tiny flowering plant distantly related to our rose. The Eskimos generally paid little attention to the plants around them because they added nothing to their food supply; but the dryad, heather, and willow furnished their fuel during the summer months, and in the hills heather and willow were not procurable.

We lingered a week at "Dryad Harbour," for the season was still early and the snow that covered the land would last another month. While the men were hunting caribou the women overhauled their bags of clothing, putting aside all the heavier garments not needed again till winter. To these they added the furniture of the snow-huts, the long wooden tables, the drying frames, and a few of the stone lamps. Each family made a separate pile of its possessions, and on top of each pile the men deposited their sealing weapons, useless for the life on land. I myself cached nearly all my provisions—pemmican, rice, oatmeal, hard bread, and tea sufficient to last me about a month; only a little tea and cornmeal I retained on my sled, to ease the transition from the "balanced" diet of

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fish here," he called. "I will finish the hole for you." 226
We changed places, and I dropped my line into the 123
water. Presently I hooked a fish, which I hauled up eagerly, hand over hand, as I had often done in boyhood; but it slipped off during a momentary pause in the strain, for the hook was barbless. Afterward Ikpuck taught me his own method of pulling in the line, and the reason for the barbless hook. He used, not his hands, but his wrists, rotating them alternately against the cord so that the strain remained constant. A barb was not only unnecessary, but a disadvantage, because, in jigging, a fish is caught in the lip where the flesh is tender, and a barbed hook often tears loose where a barbless hook holds firm.

For an hour we had no more bites, so we crossed some ridges and dug new holes in another lake, two miles away. Here the light breeze of the morning suddenly increased to a violent gale. Ikpuck, considering it part of the day's routine, sat on a snow-block with his back to the driving snow and jigged his line as patiently as in calm summer weather. I perforce did likewise, though my feet seemed to grow colder and more solid than the ice beneath. We returned to camp at last with five trout and two salmon, one from my hook, all the rest from Ikpuck's. But the lesson he gave me bore fruit, for within a month I could dig my own holes and catch as many fish as my companions. [132]

Two short moves from this lake brought us to the 133 221

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Lake of Dancing, where we hoped to meet the Tormiat natives from the Great Sound. It was famous not on account of its size—it was even smaller than the lake we had just left—nor for its abundance of fish; but because it lay near the watershed on the highway to the Great Sound, and was encircled by many larger lakes that provided good fishing until midsummer. We set up our tents on one of several old camp-sites around its margin, and settled down to await the Tormiat.

During the next six days we scoured all the hills around us, discovering a few caribou, but no natives save two families that had separated from us on the ice a month before. On every excursion we were joined by Leaf, The Runner's wife, who had borrowed her husband's .22 rifle to shoot at ptarmigan. I lent her my own rifle on one occasion when we were stalking a herd of caribou, and she killed a magnificent bull, the finest we saw on Victoria Island. The other women devoted all their time to fishing, and to drying and caching the meat and fish that began to accumulate in camp.

Spring was now advancing rapidly; so much snow had melted from the hill-sides that sledding would soon be impossible. At times the temperature rose above 40° F., though it dropped below the freezing-point again at evening. Ptarmigan were mating in every hollow, and the children launched many an arrow at them with little success.

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easily on runners of steel. The Chatterbox and his family, who came next in the line, had abandoned their sled and hitched their dogs to a polar-bear skin that carried all their possessions. Last of all came Parted-Hair's sled, in the same condition as Ikpuck's. The Listener and his wife, too old to make unnecessary journeys, remained at the lake to watch over the meat and fish we had spread out on boulders to dry in the sun.

Twelve miles from the Lake of Dancing we sighted caribou and shot a large bull. We camped beside its carcass, and the women, who had failed to bring stone lamps and blubber, trusting to cook over open fires, searched the ridge-tops for fuel. But the season was less advanced on this side of the divide and vegetation scarcer, so that they found no fuel of any kind, not even the wretched dryad. I boiled a little venison for myself on the primus lamp, but the rest dined quite cheerfully on raw meat. Their tents, too, they had left behind, but they propped up two caribou robes for shelter from the breeze and spread out their sleeping-bags under the open sky. I fell asleep to the murmur of the dance-song they were practising for the meeting with the Tormiat from the Great Sound.

Big Lake, which we reached late the next evening, appeared to be circular in outline and about ten miles in diameter. We camped near its southern end, where we found old camp-sites, although the lake itself was silent and deserted.

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IN QUEST OF THE TORMIAT

Angmaloktok, the "Ever-Frozen," is one of the largest lakes within the Colville Hills. Its minimum diameter is about four miles, and the ice that covers its surface seldom vanishes even in the warmest summers. We entered a bay at its northern end, and while the Eskimos lingered to fish, I climbed a neighbouring hill to examine the country-side. North, south, east, and west, as far as the eye could see, stretched a wilderness of frozen lakes and barren ridges. No tree, no mountain, nothing to arrest the gaze except the black, ant-like forms of men and dogs moving about in the bay below. The sun, floating in a cloudless sky, cast no shadow to relieve the desolate monotony. So depressing was the landscape that I descended the hill and, without waiting to fish, started the train in motion again.

Ikpuck, as usual, headed the procession across the lake, and I followed him closely with my sled. One of my dogs, lamed in a recent fight, ran free, but Parted-Hair, who was travelling behind me, hitched it to the sled on which his wife and step-son were riding. I halted until he came up to me, quietly released the dog, and continued on my way. Parted-Hair was annoyed. He thought he could safely defy me among his people, and seized the dog again; and again I set it free without a remark. Another mile we traversed in silence; then, for the third time, he hitched the dog to his sled and refused to let it go, even though Ikpuck himself

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Ikpuck sat on a snow-block with his back to the driving snow.

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Photo by K. G. Chipman.

It was a picturesque sight, this train of people and dogs stumbling over hill and lake.

[p. 128-B]

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133.

Whenever a shoal gathered in the upper chamber they blocked its entrance and stabbed the struggling fish with three-pointed spears.

[p. 128-G]

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Our party split up each morning and drifted in different directions, each person carrying a fishing outfit, and the men their hunting weapons. Nine or ten hours later the women straggled back with their fish, bearing also, in fine weather, loads of dryads to cook the evening meal. They cut off the heads of the fish for the cooking-pots, threw the backbones and fins to the dogs, and spread the bodies on boulders, or across horizontal poles to dry in the sun. The whole party then reassembled an hour or two before midnight, and, squatting outside the tents, gnawed the fish-heads, bone by bone, and discussed the day's adventures. The hungry dogs looked on with mournful eyes; tied to stones, they dined miserably on bones and broth.

I hunted, most of this period, to obtain caribou meat for my starving dog-team, but during a fortnight's steady tramping saw but two young bulls, which we consumed entirely in three days. The stony ridges cut to pieces my light sealskin boots, intended only for soft snow, and Icehouse, who had tried to patch them each evening, finally rebelled. "Stop hunting for a time," she said. "Your boots are wrecked beyond repair, and caribou will be scarce until the warmer weather comes and the mosquitoes drive them near our camps. Stop hunting, and I will make you new boots with stouter soles for the summer months."

It was not only my boots that troubled her. She believed that an evil demon, haunting the hills to the

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limited to about a quarter of a mile, unless the wind carried them farther. The animals suffered almost as much as ourselves. Our dogs tried to burrow in the ground to protect their feet and noses, and a young bull caribou, blinded by the cloud of mosquitoes that swarmed around its head, trotted within fifty yards of me without noticing my presence.

The warm weather, too, enlarged the lanes of water round the margins of the lakes and increased the difficulty of crossing onto the ice. Ikpuck therefore decided to return to Lake Ever-Frozen, which, from its size, remained ice-bound all or most of the summer. We first packed the dried fish one stage ahead, then returned for the camping-gear, and, thus travelling, reached in four days the eastern end of the lake not far from our old camping-place. The other families in the band had gathered there already, reunited by the same problem of food supply that a few weeks earlier had caused their dispersal.

My two months of practical training should have rendered me a past master in the fishing technique of my companions, but at this lake they taught me a new device. The largest trout always lay deepest, but none of our lines would reach the bottom of the lake. Moreover a long line, if drawn up quickly hand over hand—or wrist over wrist, in true Eskimo fashion—invariably tangles. Ikpuck's method was to lower his line to the last inch, and, when a fish struck, to run back-

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almost devoid of vegetation. We stumbled over a bed of dolomite split by frost into rectangular blocks, its resemblance to the floor of an ancient temple heightened by two stone pillars erected several years before to support a kayak or hunting canoe. A mile or two beyond a caribou caught our scent, whisked up its tail, and bounded out of sight behind a low ridge. We could see a fair-sized stream in the distance tumbling among the rocks; and there Ikpuck instructed us to camp while he pursued the caribou that had just disappeared. Twelve hours later, when every one was asleep, he returned, and, pushing open the door of my tent, displayed the skins of two caribou; their carcasses he had left side by side for the women to bring in, merely aligning some boulders on top of a knoll to guide them in their search. Icehouse and Jennie dressed and departed immediately with dogs and packlines. The howling of the other dogs aroused the camp, and a second party went out to look for more caribou. So, for one reason and another, we lingered in this spot nearly three days.

Instead of hunting during this interval, I made a collection of all the plants growing around us, and enjoyed two swims in a neighbouring pool. A bath is a rare luxury in the Arctic, where there is often no water to wash even the face and hands. My companions solved the problem by never washing. Contact with the snow in winter purified them, and in

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252 During one of our hunting excursions, Ikpuck initiated me into a method of cooking meat different from the usual process of boiling. We had shot a caribou ten miles in advance of our party, close to a tilted bed of dolomite that broke away in large, thin slabs like roofing slate. With four of these slabs he built a Dutch oven against a low bank, strewed the top slab with moss and moistened it with water from a neighbouring pool; he then laid his slices of meat and back fat on the moss, covered them with an inverted sod of fresh, green grass, and lit a fire inside the oven. As the under-side of the meat broiled he turned it over and remoistened it. When cooked it was both tender and appetizing, though the moss gave it a rather peculiar flavour. To relieve our hunger while the steaks were broiling he also roasted in the fire two leg-bones and the liver. The bones cooked in about three minutes, and, when the ends were broken, the marrow flowed out like melted butter. Huxley says that only savages eat marrow; if that be true, our epicures are neglecting one of nature's choicest viands. It may be, however, that taste varies with environment, for when Anderson mailed some dried back fat to my office a few years later I nibbled one small piece for old times' sake and threw the remainder out of the window.

• 133 As we travelled on we came to a deep gorge where a large stream cut through the final line of hills, bar-

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ring its passage to the sea. To the north lay a broad, sandy plain, the bed of an ancient lake, and beyond, an isolated, rounded hill flanked by soft meadows that were certain to harbour caribou. We all forded the stream without mishap except Jennie, who had dropped behind when readjusting the packs of two dogs. I went back to look for her, while the others pushed on across the plain. The poor child was nearly a mile in the rear, still struggling cheerfully with the ill-balanced packs that persisted in slipping under the animals' bellies. I rearranged them for her, and we hurried on to overtake our companions; but a fierce sand-storm now swept the plain, and our progress was slow and painful, with frequent returnings to urge on the dogs. Dogs and storm combined delayed us so greatly that the hunters, tired of waiting for us at the hill, went on ahead to intercept a herd of caribou they had sighted, leaving little Knife-Blade to watch for me and request me to join them with all speed.

This hunt well illustrated the unity of an Eskimo band. Every individual, man, woman, and child, took part in it—except The Listener's wife, who, being old and feeble, remained to guard the packs; and both men and women contributed to the discussion that decided the tactics to be employed. At the foot of the hill stretched a lake three-quarters of a mile in diameter, and, beyond it, a wide, grassy plain where fifteen caribou were grazing. The plain rose in a gentle incline

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[133] toward the west, where it dropped abruptly down to another lake. The Eskimos planned to make the fullest use of these topographical features by enclosing the caribou within a long rectangle of which the lake and ridge formed two adjacent sides. On the other long side, parallel with the lake, they built low mounds of turf twenty or thirty yards apart that from a distance resembled the black heads of half-concealed men; and here and there, where the ground was low, they set up their jackets on walking-sticks, or left a child to rise to his feet and frighten the caribou back. The fourth side, from the end of this "fence" to the eastern extremity of the lake, they left open until they should take up their positions behind the ridge, when the women, at a given signal, would close the gap and drive the caribou toward them.

When Jennie and I arrived at the camp the hunters had already given the signal and the women were preparing to carry out their part of the program. I accompanied them, as it was then too late to join the firing-line. The caribou scented us half a mile away and fled down the wind to the crest of the ridge; but there the bullets and arrows of the hunters rained among them, turning them back toward us. The women shouted and waved their arms, I opened fire with my rifle, and the terror-stricken animals stampeded back again; one swam the lake and passed our camp, two dashed through the "fence" of turf and children,

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of sealskin, over which was lashed a pair of stout cords of twisted sinew. It was the sinew that gave the weapon its spring, for the frame was merely driftwood picked up on the beach, or spruce of the poorest quality. Such crude materials, added to crude workmanship, made the balance very uneven, so that although the maximum range of the weapon was about one hundred and twenty-five yards, its effective range hardly exceeded twenty-five. Indeed, I have seen The Listener miss a caribou that passed not more than fifteen yards away.

While the adults amused themselves at archery beside the camp the children played their own games on the slope above. They set up fences of turf to enclose fictitious caribou, and dug shallow pits from which to shoot their arrows; or they marked out a line of snow-huts with pebbles, and filled the dance-house with imaginary singers. Thus the occupations of the parents were the pastimes of the children, who learned in play their duties of after years.

Twenty-five miles west of the sand-plain, at Bad Creek, we left The Listener's wife to dry our stock of meat, promising to rejoin her before many days; with lightened packs we then pushed on toward Mt. Arrowsmith, camping near a crag of diabase twelve feet high that formed a landmark visible for many miles. Here we encountered a violent snow-storm that continued unabated for two days. We spent the first in our sleep-

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solitary vigil, it certainly left no traces in her appearance or mode of greeting. Her people, unlike other Eskimo tribes, never voluntarily abandoned the aged and infirm to die of cold and starvation, but prolonged their closing years with loving care. Parents and children were united by tender bonds that neither time nor distance dissolved. I once witnessed the chance meeting of an old woman with her middle-aged son who had been living in a remote tribe for many years; the stalwart hunter knelt in the snow at her feet, and, as she raised her jacket, reverently touched with his lips the breast that had nourished him in childhood.

A little north of our camp, Bad Creek cut through an outcrop of dolomite, forming a narrow S-shaped cañon a quarter of a mile long and forty feet deep. The locality was very familiar to my companions. From a ledge just under the brow of the cliff we dropped our hooks into a deep pool, and in a few hours hauled out seven large trout. (Whether any trout remained in the pool all winter, or whether they ascended to a lake before the freeze-up, I do not know; above and below there was less than three feet of water in the stream, which would freeze to the bottom before Christmas.) A gravel beach at the outlet of the cañon contained numerous pebbles of iron pyrites, used by the natives for striking fire; and a neighbouring meadow was white with the seeds of the cotton-grass that supplied both tinder and wicks for the lamps. The

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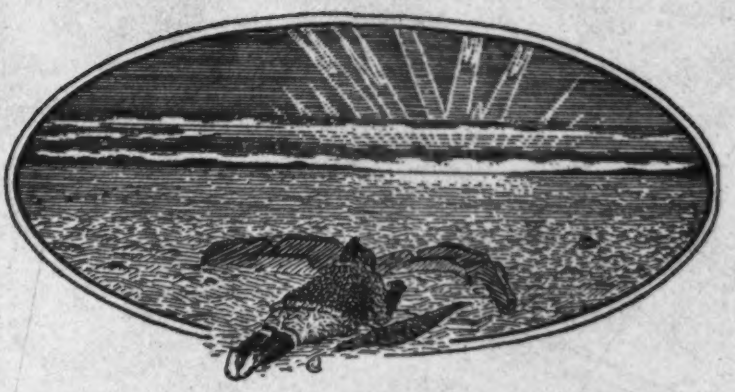

CHAPTER X

DARKENING DAYS

IKPUCK chose for our tent-site a level patch of ground beside a small lake that filled a dip in the rolling plain behind Dryad Harbour. Through a hole in the ice we drew our water, and for fuel we used the dwarf willow that grew abundantly all around, or burned the yellow fat of the polar bear in a naturally hollow stone. Low ridges blocked the view on all sides, shutting out even the sea four miles away; but the ridge to the north overlooked a long valley so rich in moss that we expected the migrating caribou to make it their highway. On the crest of this ridge, therefore, we built a low semi-circular wall of stones, chinked with snow, that would both conceal and shelter the watcher; and every morning, at dawn, some one visited the look-out post to search